

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
17 February 2005 (17.02.2005)

PCT

(10) International Publication Number
WO 2005/015124 A1

(51) International Patent Classification?: **G01B 11/24**,
11/30

[GB/GB]; c/o Taylor Hobson Limited, 2 New Star Road,
Leicester LE4 9JQ (GB).

(21) International Application Number:
PCT/GB2004/003066

(74) Agent: **BERESFORD, Keith, Denis, Lewis**; Beresford &
Co, 16 High Holborn, London WC1V 6BX (GB).

(22) International Filing Date: 14 July 2004 (14.07.2004)

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AI, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0316916.6 18 July 2003 (18.07.2003) GB

(71) Applicant (for all designated States except US): **TAYLOR
HOBSON LIMITED** [GB/GB]; 2 New Star Road, Leices-
ter LE4 9JQ (GB).

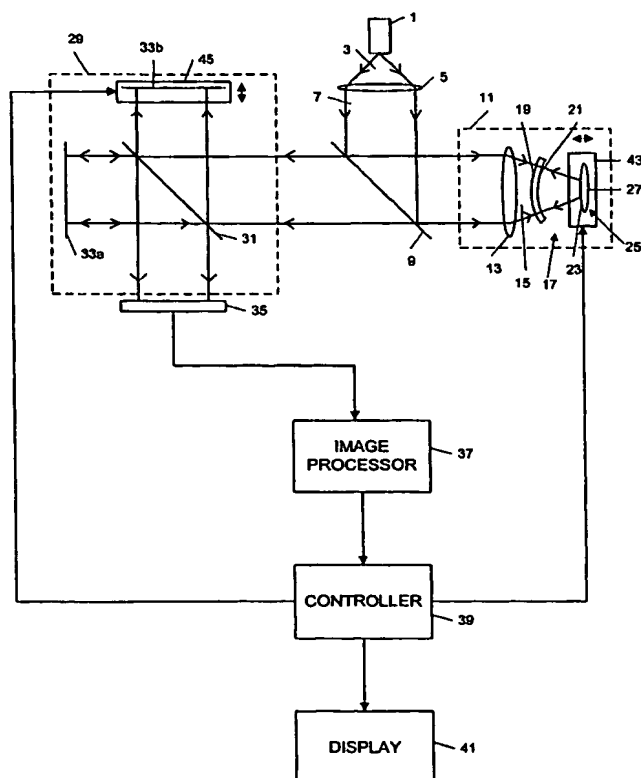
(72) Inventor; and

(75) Inventor/Applicant (for US only): **MANSFIELD, Daniel**

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: SURFACE PROFILING METHOD AND APPARATUS



(57) Abstract: There is described a surface profiling apparatus in which light from a broadband light source (1) is directed to an interference zone along first and second light paths, the first light path including the non-planar sample surface (23) and the second light path including a reference surface (21). The light travelling along the first light path comprises a sample light beam having wavefronts which vary along the direction of propagation. The sample surface (23) is moved through the sample light beam so that at different positions of the sample surface along the direction of propagation, different regions of the sample surface (23) substantially match a wavefront of the sample light beam. As this movement of the sample surface (23) causes a variation in the optical path lengths of the first and second light paths, the apparatus includes means for compensating for differences between the optical path lengths so that light from portions of the sample surface (23) which substantially match a wavefront of the sample light beam and light from corresponding portions of the reference surface (21) produce an interference pattern in the interference zone.

WO 2005/015124 A1

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

— with international search report